

AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A method for producing a probe array of Claim 15, comprising the steps of:

selecting plural types of probes of interest;

immobilizing the plural types of probes on surfaces of different solid pieces; and

aligning the probe-immobilized solid pieces in a designated order to obtain a probe array for analyzing a sample solution passing therethrough.

2. **(Original)** The method according to Claim 1, wherein the probes are polynucleotides, peptides, or proteins.

3. **(Original)** The method according to Claim 1, wherein the solid pieces are beads.

4. **(Original)** The method according to Claim 3, wherein the beads are fine particles.

5. **(Original)** The method according to Claim 1, wherein the alignment of the solid pieces is a one-dimensional arrangement or a two-dimensional arrangement.

6. **(Original)** The method according to Claim 1, further comprising placing solid pieces as markers at specified intervals in the alignment.

7. **(Original)** The method according to Claim 1, wherein each solid piece has one type of probe immobilized thereon, and a designated number of solid pieces for each type of probe are prepared.

8. **(Original)** The method according to Claim 6, wherein the markers have a different size from that of the solid pieces with probes.

9. **(Original)** The method according to Claim 1, wherein the alignment is conducted in an array selected from the group consisting of a capillary, a groove, and an optical cell.

10. **(Original)** The method according to Claim 9, wherein the alignment is conducted by (i) placing the probe-immobilized solid pieces in a well on a sheet having a hole through which one solid piece can pass, said sheet being placed on a movable base having a through-hole leading into the array holder, said movable base being positioned where the hole of the sheet does not communicate with the through-hole of the movable base; (ii) trapping one of the solid pieces in the hole of the sheet; (iii) removing the remaining solid pieces from the sheet; (iii) moving the movable base to a position where the hole of the sheet communicates with the through-hole of the movable base; (iv) transferring the trapped solid piece to the array via the

through-hole; and (v) repeating steps (i) through (iv) until the probe-immobilized solid pieces are aligned in the designated order in the array.

11. **(Original)** The method according to Claim 9, wherein the alignment is conducted by (i) placing the probe-immobilized solid pieces in a well on a sheet having a hole through which one solid piece can pass, said hole leading to the interior of the array, said hole being closed with a valve; (ii) trapping one of the solid pieces in the hole of the sheet or in the well; (iii) opening the valve to transfer the trapped solid piece to the array, and (iv) repeating steps (i) through (iii) until the probe-immobilized solid pieces are aligned in the designated order in the capillary, groove, or optical cell.

12. **(Original)** The method according to Claim 7, wherein the alignment is conducted by (i) placing the probe-immobilized solid pieces in wells, each well containing a single type of probe-immobilized solid pieces, each well having a hole through which one solid piece can pass, said hole being closed; (ii) trapping one of the solid pieces in each hole of each well; (iii) opening and closing each hole after moving the wells in a designated order to transfer each trapped solid piece to an array; (iv) moving the wells to align the probe-immobilized solid pieces in a next array; and (v) repeating steps (i) through (iv) until a designated number of arrays are filled with the probe-immobilized solid pieces aligned therein.

13. **(Original)** The method according to Claim 9, wherein the alignment is conducted by (i) placing the probe-immobilized solid pieces in a narrow tube; (ii) flowing the solid pieces one by one with a solution along the narrow tube, to transfer the discharged solid piece to the array, and (iii) repeating steps (i) and (ii) until the probe-immobilized solid pieces are aligned in the designated order in the array.

14. **(Original)** The method according to Claim 7, wherein the alignment is conducted by (i) placing the probe-immobilized solid pieces in sections, each section containing a single type of probe-immobilized solid pieces, each section having a hole through which one solid piece can pass, said hole being closed; (ii) trapping one of the solid pieces in each hole of each section; (iii) opening and closing each hole after moving the sections in a designated order to transfer each trapped solid piece to a groove; (iv) repeating steps (i) through (iii) until the probe-immobilized solid pieces are aligned in the groove in order; and (v) transferring the aligned probe-immobilized solid pieces to an array wherein the solid pieces are placed close together.

15. **(Original)** A probe array for analyzing a sample solution passing therethrough, comprising:

plural types of probes immobilized on surfaces of different solid pieces; and
an array wherein the probe-immobilized solid pieces are aligned in a designated order.

16. **(Original)** The probe array according to Claim 15, wherein the probes are polynucleotides, peptides, or proteins.

17. **(Original)** The probe array according to Claim 15, wherein the solid pieces are beads.

18. **(Original)** The probe array according to Claim 17, wherein the beads are fine particles.

19. **(Original)** The probe array according to Claim 15, wherein the alignment of the solid pieces is a one-dimensional arrangement or a two-dimensional arrangement.

20. **(Original)** The probe array according to Claim 15, further comprising solid pieces as markers at specified intervals in the alignment.

21. **(Original)** The probe array according to Claim 15, wherein each solid piece has one type of probe immobilized thereon, and a designated number of solid pieces for each type of probe are prepared.

22. **(Original)** The probe array according to Claim 20, wherein the markers have a different size from that of the solid pieces with probes.

23. **(Original)** The probe array according to Claim 15, wherein the array is selected from the group consisting of a capillary, a groove, and an optical cell.

24. **(Withdrawn)** An apparatus for manufacturing a probe array, comprising:

a sheet or well for supporting probe-immobilized solid pieces, said sheet or well having a hole through which one solid piece can pass;

a movable base on which the sheet or well is placed, said movable base having a through-hole leading to an array, said movable base being movable between a position where the hole does not communicate with the through-hole, wherein a probe-immobilized solid piece is trapped in the hole, and a position where the hole communicates with the through-hole, wherein the probe-immobilized solid piece is discharged; and

an array detachably communicating with the through-hole, wherein the probe-immobilized solid pieces can be aligned in a designated order in the array.

25. **(Withdrawn)** An apparatus for manufacturing a probe array, comprising:

a sheet or cell for supporting probe-immobilized solid pieces, said sheet or cell having a hole through which one solid piece can pass, said hole leading to an array;

a valve for closing the hole, wherein when the hole is closed, a probe-immobilized solid piece is trapped in the hole, and when the hole is opened, the probe-immobilized solid piece is discharged; and

an array detachably communicating with the hole, wherein the probe-immobilized solid pieces can be aligned in a designated order in the array.

26. **(Withdrawn)** An apparatus for manufacturing a probe array, comprising:

a plate having a plurality of wells for supporting probe-immobilized solid pieces therein, each well corresponding to one type of probe-immobilized solid pieces, each well having a hole through which one solid piece can pass;

valves for closing the holes, wherein when each hole is closed, a probe-immobilized solid piece is trapped in the hole, and when each hole is opened, the probe-immobilized solid piece is discharged, said valves being manipulated in a designated order; and

a plurality of arrays communicating with the holes, wherein the probe-immobilized solid pieces can be aligned in a designated order in each array.

27. **(Withdrawn)** An apparatus for manufacturing a probe array, comprising:

a narrow tube for supporting probe-immobilized solid pieces therein;

an outer tube surrounding the narrow tube wherein a solution flows in a direction of discharging the solid pieces one by one; and

an array receiving the solid pieces discharged from the narrow tube, wherein the probe-immobilized solid pieces can be aligned in a designated order in the array.

28. **(Withdrawn)** An apparatus for manufacturing a probe array, comprising:

a plate having sections for supporting probe-immobilized solid pieces therein, each section containing a single type of probe-immobilized solid pieces, each section having a hole through which one solid piece can pass, said hole having a valve;

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a second plate having grooves for receiving probe-immobilized solid pieces passing through the holes in a designated order; and

an array receiving the solid pieces transferred from the grooves, wherein the solid pieces are placed close together in order.